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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/807,823	04/19/2001	Masakazu Okuda	DP-548 US	6176

7590

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EXAMINER

NGUYEN, LAM S

ART UNIT

PAPER NUMBER

2853

DATE MAILED: 08/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/807,823

Applicant(s)

OKUDA, MASAKAZU

Examiner

LAM S NGUYEN

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 18-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Objections*

Claims 20-22 are objected to because of the following informalities: “reduces the voltage” in “a fourth voltage changing process which applies voltage in a direction that *reduces the voltage* of said pressure generating chamber” should be “reduces the volume”. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

1. Claims 18-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Iwamura et al. (US 6467865).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C.

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102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Iwamura et al. disclose a method for driving an ink jet recording head which method applies a driving voltage to an electromechanical converter (in term of "pressure generating means") (column 2, line 22) to deform the electromechanical converter to thereby change a pressure in the pressure generating chamber filled with ink (FIG. 6, element 14), thus ejecting ink droplets with a size of about 5 to about 25 micrometers (column 2, line 40-41) through a nozzle (FIG. 6, element 18) in communication with the pressure generating chamber, the method being characterized in that a voltage waveform of said driving voltage comprises:

at least a first voltage changing process (FIG. 7, element corresponding to period t1) which applies a voltage in a direction that increases a volume of said pressure generating chamber;

a second voltage changing process (FIG. 7, element corresponding to period t3) which applies a voltage in a direction that reduces the volume of said pressure generating chamber; and

a third voltage changing process (FIG. 7, element corresponding to period t4) which applies a voltage in a direction that increases the volume of said pressure generating chamber again;

wherein voltage changing times t2 (FIG. 7, period t3 = 2μm) and t3 (FIG. 7,

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period  $t_4 = 2\mu\text{m}$ ) (column 7, line 67) during the second and third voltage changing processes are set to have such lengths as shown below, relative to a resonance frequency  $T_c$  (column 5, line 24-34:  $T_c$  is set within the range of 5-20 $\mu\text{m}$ ), of a pressure wave generated in the pressure generating chamber:

$$0 < t_2 = 2\mu\text{m} < T_c/2 = 2.5\text{-}5\mu\text{m}$$

$$0 < t_3 = 2\mu\text{m} < T_c/2 = 2.5\text{-}5\mu\text{m}$$

wherein said nozzle has an opening diameter of about 20 to less than 30 $\mu\text{m}$  (column 2, line 42-43).

**Referring to claim 19:** a start time to said third voltage changing process is about the same as an end time of said second voltage changing process (FIG. 7).

**Referring to claims 20, 21:** a fourth voltage changing process (FIG. 7, element corresponding to period  $T_6 = 2\mu\text{m}$  (column 7, line 67)) which applies a voltage in a direction that reduces the volume of said pressure generating chamber, after said first voltage changing process, said second voltage changing process, and said third voltage changing process, wherein the voltage changing time  $t_4$  during said fourth voltage changing process has a length relative to the resonance frequency  $T_c$  (column 5, line 24-34:  $T_c$  is set within the range of 5-20 $\mu\text{m}$ ) of the pressure wave generated in said pressure generating chamber as follows:

$$0 < t_4 = 2\mu\text{m} < T/2 = 2.5\text{-}5\mu\text{m}$$

**Referring to claim 22:** wherein a time interval between a start time of said second voltage changing process and a start time of said fourth voltage changing process (FIG. 7:  $t_3 + t_4 + t_5 = 6\mu\text{m}$ ) is set substantially half the length of the resonance frequency  $T_c$  (column 5, line 24-34:  $T_c$  is set within the range of 5-20 $\mu\text{m}$ . If  $T_c$  is set as 12 $\mu\text{m}$ ,  $t_3 + t_4 + t_5 = 6\mu\text{m}$  is half the

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length of the resonance frequency  $T_c$ ) of the pressure wave generated in said pressure generating chamber.

### **Response to Arguments**

Applicant's arguments with respect to claims 18-22 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S NGUYEN whose telephone number is (703)305-3342. The examiner can normally be reached on 7:00AM - 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D. MEIER can be reached on (703)308-4896. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3431 for regular communications and (703)305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

LN

July 25, 2003

  
Stephen D. Meier  
Primary Examiner